

REMARKS

Prior to Examination on the merits, this Preliminary Amendment is being submitted with a response to the Restriction Requirement dated December 17, 2002. Claims 5, 6 10-17, 20-23, 27 and 28 are hereby amended into method claims. Examination on the merits of all claims is now requested. All claims being in condition for allowance, an early indication of same is solicited.

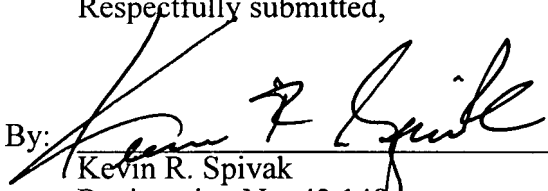
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 474082001100.

Respectfully submitted,

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By:


Kevin R. Spivak
Registration No. 43,148

Morrison & Foerster LLP
1650 Tysons Boulevard
Suite 300
McLean, Virginia 22102
Telephone: (703) 760-7762
Facsimile: (703) 760-7777



VERSION WITH MARKINGS TO SHOW CHANGES MADE

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In the Claims:

Please amend the claims as follows.

5. (Amended) A double side polishing method using for a [A] double side polishing apparatus, comprising:

a polishing apparatus main body for at least automatically rotating a plurality of carriers holding works to be polished, between an upper and a lower rotary surface plates to simultaneously polish both surfaces of a plurality of works held by the plurality of carriers;

a merging mechanism for merging each work with the carrier outside the polishing apparatus main body; and

a supply mechanism for supplying the work merged with the carrier outside the polishing apparatus main body, to the lower surface plate in a merged state, said merging mechanism comprises:

a first aligning mechanism for aligning the carrier;

a second aligning mechanism for aligning the work before merging it with the carrier; and

a conveying mechanism for conveying the aligned work into the aligned carrier.

6. (Amended) The double side polishing method [apparatus] according to claim 5, wherein said supply mechanism also acts as an ejection mechanism for ejecting the work polished on the lower surface plate to an exterior of the polishing apparatus main body while remaining merged with the carrier.

10.(Amended) A double side polishing method using for a [A] double side polishing apparatus comprising a polishing apparatus main body for at least automatically rotating a plurality of carriers holding works to be polished, between an upper and a lower rotary surface

plates to simultaneously polish both surfaces of a plurality of works held by the plurality of carriers, in which a plurality of fluid nozzles are provided in the lower rotary surface plate opposite to the plurality of works between the rotary surface plates, the nozzles being opened in a surface of the surface plate, and the plurality of fluid nozzles provided in the lower rotary surface plate are connected to a suction mechanism.

11. (Amended) The double side polishing method [apparatus] according to claim 10, wherein the plurality of fluid nozzles opened in the surface of the surface plate are provided in the upper rotary surface plate and connected to a liquid supply mechanism.

12. (Amended) A double side polishing method using for a [A] double side polishing apparatus, comprising:

a polishing apparatus main body for at least rotating a plurality of carriers holding works to be polished, between an upper and a lower rotary surface plates to simultaneously polish both surfaces of a plurality of works held by the plurality of carriers;

a housing section arranged between the upper and lower rotary surface plates instead of the plurality of carriers and at least auto rotating between the upper and lower rotary surface plates similarly to the carriers to house a plurality of processing bodies for processing polishing cloths installed on opposite surfaces of the upper and lower rotary surface plates; and

a conveying section for supplying the plurality of processing bodies between the upper and lower rotary surface plates from the housing section and ejecting the used processing bodies from between the upper and lower rotary surface plates.

13. (Amended) The double side polishing method [apparatus] according to claim 12, wherein said processing bodies are brushes that clean the polishing clothes and/or dressers that level them.

14. (Amended) The double side polishing method [apparatus] according to claim 12, wherein said conveying section is also used as a work conveying section for supplying unpolished works between the upper and lower rotary surface plates and ejecting polished works from between the upper and lower rotary surface plates.

15. (Amended) The double side polishing method [apparatus] according to claim[s] 5, the polishing apparatus main body comprising:

a pair of rotary surface plates for polishing both surfaces of the works;

a plurality of gear-shaped carriers arranged in a periphery of a rotation center between the pair of rotary surface plates to eccentrically hold the works;

a center gear arranged in the rotation center between the pair of rotary surface plates to engage with the plurality of carriers arranged in the periphery to synchronously rotate them automatically; and

a plurality of auto rotation means distributed around the plurality of carriers so as to correspond to them and each engaging with the carrier located inside the rotation means

to hold and automatically rotate said carrier at its specified position in corporation with the center gear.

16. (Amended) The double side polishing method [apparatus] according to claim 15, wherein each of the auto rotation means engages with the carrier at one or two or more positions and has one or more rotary gears each having a tooth trace along a rotation axis thereof.

17. (Amended) The double side polishing method [apparatus] according to claim 16, wherein said rotary gear is movable in a rotation axis direction.

20. (Amended) The double side polishing method [apparatus] according to claim 15, wherein each of the auto rotation means is configured to automatically rotate the carrier by means of a worm gear.

21. (Amended) The double side polishing method [apparatus] according to claim 20, wherein said worm gear is made of a resin.

22. (Amended) The double side polishing method [apparatus] according to claim[s] 5, wherein the polishing apparatus main body is based on a method of polishing both surfaces of the wafer held on each carrier by arranging the plurality of carriers holding the wafers between the upper and lower rotary surface plates at predetermined intervals in the rotation direction, and engaging each carrier with a sun gear located in the center of the surface plate and inner gears located in a periphery thereof, to cause each carrier to make a planetary motion between the upper and lower rotary surface plates, and there are provided a plurality of supply passages of grinding liquid in the upper rotary surface plate for supplying grinding liquid between upper and lower rotary surface plates, and a sun gear is integrated at a central part of the lower rotary surface plate.

23. (Amended) The double side polishing method [apparatus] according to claim 22, wherein the upper rotary surface plate is rotationally driven independently of the lower rotary surface plate.

27. (Amended) The double side polishing method [apparatus] according to claim 5, comprising:

a robot arm moving in at least two directions to transfer and load the wafers supported in a horizontal direction; and

a top sucking chuck attached to the robot arm to suck a top surface of said wafer, the top sucking chuck is made of an outer-circumference annular sucking type that comes in contact with a top surface of a periphery of said wafer in the form of an annulus ring and that has a plurality of suction ports in the annular contact surface, the suction ports being formed in a circumferential direction at intervals.

28. (Amended) The double side polishing method [apparatus] according to claim 5, comprising:

a robot arm moving in at least two directions to transfer and load the wafers supported in a horizontal direction; and

a bottom sucking chuck attached to the robot arm to bear said wafer from below while sucking a bottom surface thereof, the bottom sucking chuck is made of an outer-circumference arc-shaped sucking type that comes in contact with a circumferential part of a bottom surface of a periphery of the wafer in the form of a circular arc and that has a plurality of suction ports in the circular arc contact surface, the suction ports being formed in a circumferential direction at intervals.